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Stress among parents of amblyopic children in Saudi Arabia

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ABSTRACT

It found that stress is significant in mothers of children with amblyopia. In Saudi Arabia the prevalence of amblyopia among children ranges from 1.3 to 3.9%. The amblyopic child's attitude toward treatment is a source of stress for parents. *Purpose:* To establish the relationship between stress and having an amblyopic child among parents in Saudi Arabia using the Perceived Stress Scale. *Methodology:* A descriptive cross-sectional study was conducted among 100 parents who has an amblyopic child from July to August 2020. The Study was distributed in two tertiary eye care hospitals in Al Ahsa, in the Eastern province of Saudi Arabia. *Result:* It showed that Refractive errors were the most frequently reported cause of amblyopia among children by 53%. Most of the children treated by combination of occlusion and glasses with only one child underwent surgery and 3 children had no treatment. We found Moderate to high stress level among 90.4% of mothers compared to 88.2% of fathers but were not statistically significant. High level of stress (93.8%) detected among parents whose children treated by occlusion therapy compared to 66.7% of those who did not receive this kind of treatment. *Conclusion:* Our study showed moderate level of stress (80%) in the majority of parents of amblyopic children compared with only 10% of them showing high level of stress but was not statistically significant (P=.790).

Keywords: Amblyopia, Stress, children, parent, Saudi Arabia.

1. INTRODUCTION

A child brings a new experience to his/her family. He/she also has a great impact on his family, physiologically and psychologically, especially on his parents. The psychological impact could be positive or negative (Süle, 2016). One of the psychological impacts is stress, which is defined as the state of psychological upset or disequilibrium in human beings caused by frustrations, conflicts and other internal or external pressures (Pastey et al., 2006). Stress is seen to commonly occurs in parents who care for children with any disability, such as: special needs (Dyson, Lily, 1997), cancer (Masa'Deh et al., 2012), and even an amblyopia. Amblyopia (lazy eye) is a visual impairment due to the interruption of normal visual development, which could be unilateral or bilateral (Preslan, 1996). The most common predisposing conditions for

amblyopia are strabismus (Squint), refractive errors (in particular hyperopia or anisometropia) or, more rarely, opacification of the ocular media which reduce the image quality, like congenital cataract (Attebo et al., 1998). The prevalence of amblyopia is reported to range from 0.2% to 6.2% worldwide (Mocanu et al., 2018). The prevalence of amblyopia was found to vary in different regions of Saudi Arabia: 3.9% in Qassim province (Aldepasi & Yousef Hommod, 2015), 2.6% in Riyadh (Al-Assaf & Fatani, 1994), 1.9% in Abha (Abolfotouh et al., 1994), and 1.6% in Al Baha City (Alfaran & Mubarak, 1992), and 1.3% in Jeddah (Baradisi et al., 2008). The critical period for developing amblyopia in children extends to 8 years which is the period for developing the visual system and is relatively easy to correct until that age by improving the quality of visual input in the affected eye but with age it becomes increasingly resistant to reversal (Hensch et al., 2018). The most responsive age of amblyopic child to treatment is between 3-13 years of age (Holmes et al., 2018).

Amblyopia can be treated by several methods including glasses for correction of refractive errors, occlusion using adhesive patches or Bangerter filters, and pharmacologic penalization using atropine in the normal eye. Of these, occlusion and glasses are the most common ones (Scheiman et al., 2011). A few studies have been done to explore the psychological impact of amblyopia and its treatment on the parents (Park et al., 2015; Kitasato et al., 2020; Choong et al., 2004; Dixon-Woods et al., 2006). However, stress has been noted to be significant in mothers of children with amblyopia (Park et al., 2015). Also, the amblyopic child's attitude toward treatment is a source of stress for guardians (Kitasato et al., 2020). The treatment of amblyopia itself has a stressful impact, some families felt that glasses were more stressful (Choong et al., 2004), and other families felt the occlusion therapy was more stressful (Dixon-Woods et al., 2006).

In recent years, there have been some studies on the psychological burden on the guardians of children with amblyopia in western countries. However, until now, there is no study that has investigated the stress among parents of amblyopic children in Saudi Arabia. Therefore, this study aims to investigate the relationship between stress and having an amblyopic child among parents in Saudi Arabia by using a questionnaire Perceived Stress Scale (PSS) and to explore potential factors implicated in development of stress among such parents.

2. METHODOLOGY

Study design & Participants

This study was a cross-sectional study conducted to examine the stressful impact of having an amblyopic child among parents in Saudi Arabia. It approved by the ethical committee of College of Medicine, King Faisal University in 25/10/2020 with ethical approval code: 2020-10-78. All data collected was kept confidential and consent was taken from the participants prior to the survey. It was conducted from August to December 2020 in two tertiary eye care centers in Al-Ahsa in Saudi Arabia. In addition, the study was also distributed online to parents by a Google form survey. The study included parents who had an amblyopic child, and the child's age was between 3-17 years. Out of 230 parents, 100 participants fitted the inclusion criteria. All PSS questions and data variables (causes of amblyopia, guardian, type of treatment of amblyopia, duration of treatment, and age of the amblyopic child) were collected through the survey.

Data analysis

After the data was extracted, it was revised, coded, and fed to statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analyses were done using two tailed tests. P value less than 0.05 was considered statistically significant. Stress level was assessed by summing-up all discrete scores for the PSS after reversing positive questions, after which parents who had scores between 0-13 were considered to have low stress, scores between 14-26 were considered to have moderate stress, while scores between 27-40 were considered to have high perceived stress. Descriptive analysis based on frequency and percent distribution was done for all variables including age, causes of amblyopia, treatment received and respondent parent. Cross tabulation was used to assess distribution of parents' perceived stress level according to parents' personal data and amblyopia related data. Relations were tested using exact probability test due to small frequencies.

3. RESULTS

The study included 100 parents of children with amblyopia. The majority of participants were mothers (83%). Children ages ranged from 3 to 13 years with mean age of 8.5 ± 3.6 years. Regarding reasons of amblyopia, refractive errors was the most reported cause (53%) followed by strabismus (32%), ptosis (7%), and optic nerve atrophy (3%). As for treatment method, 16 children were treated by occlusion while glasses were used in 39 children and only one child underwent surgery while 3 children had no treatment. 25.3% of the children received treatment of duration less than 1 year while 24.2% received treatment for the last 2-3 years (table 1).

Table 1 Personal data of amblyopia children parents, and child amblyopia Saudi Arabia

Personal data		*No*	*%*
Relationship with an amblyopic child	*Mother*	*83*	*83.0%*
	Father	*17*	*17.0%*
Age in years	*1-5*	*25*	*25.0%*
	6-10	*44*	*44.0%*
	11-18	*31*	*31.0%*
The reason of amblyopia	*Anisometropia*	*1*	*1.0%*
	Refractive error	*53*	*53.0%*
	Strabismus	*32*	*32.0%*
	Ptosis	*7*	*7.0%*
	Optic nerve atrophy	*3*	*3.0%*
	Unknown	*2*	*2.0%*
	Cataract	*1*	*1.0%*
	Traumatic	*1*	*1.0%*
Treatment of amblyopia	*No treatment*	*3*	*3.0%*
	Occlusion	*16*	*16.0%*
	Glass	*39*	*39.0%*
	Both	*42*	*42.0%*
The duration since starting treatment	*< 1 year*	*23*	*25.3%*
	1 year	*15*	*16.5%*
	2-3 Yrs.	*22*	*24.2%*
	4+	*31*	*34.1%*

In total, 80% of the parents had moderate degree of perceived stress, and high stress was detected among 10% of them (figure 1). Table 2 illustrates distribution of parents' perceived stress according to their personal data and child amblyopia. Moderate to high stress was detected among 90.4% of mothers compared to 88.2% of fathers but was not statistically significant (P=.790). All parents of children with anisometropia, cataract, optic nerve atrophy, or traumatic amblyopia had higher stress level compared to 57.1% of those for a child with ptosis (P=.209). 93.8% of parents of children treated with occlusion had high stress level compared to 66.7% of those who did not need treatment (P=.482). Parents of children who had treatment in the last 4 years or more showed higher stress than parents for those who received treatment for less than 1 year, but was not statistically significant (93.5% vs. 82.6%, respectively; P=.561).

Table 2 Distribution of parents perceived stress according to their personal data and child amblyopia

Personal data		*Perceived stress level*				*P-value*
		Low		*Moderate/ high*		
		No	*%*	*No*	*%*	
Relationship with an amblyopic child	Mother	*8*	*9.6%*	*75*	*90.4%*	*.790*
	Father	*2*	*11.8%*	*15*	*88.2%*	
Age in years	1-5	*5*	*20.0%*	*20*	*80.0%*	*.120*
	6-10	*2*	*4.5%*	*42*	*95.5%*	
	11-18	*3*	*9.7%*	*28*	*90.3%*	
The reason of amblyopia	Anisometropia	*0*	*0.0%*	*1*	*100.0%*	*.209*
	Cataract	*0*	*0.0%*	*1*	*100.0%*	
	Optic nerve atrophy	*0*	*0.0%*	*3*	*100.0%*	
	Ptosis	*3*	*42.9%*	*4*	*57.1%*	
	Refractive error	*4*	*7.5%*	*49*	*92.5%*	

	Strabismus	*3*	*9.4%*	*29*	*90.6%*	
	Traumatic	*0*	*0.0%*	*1*	*100.0%*	
	Unknown	*0*	*0.0%*	*2*	*100.0%*	
Treatment of amblyopia	No treatment	*1*	*33.3%*	*2*	*66.7%*	*.482*
	Occlusion	*1*	*6.3%*	*15*	*93.8%*	
	Glass	*3*	*7.7%*	*36*	*92.3%*	
	Both	*5*	*11.9%*	*37*	*88.1%*	
The duration since starting treatment	< 1 year	*4*	*17.4%*	*19*	*82.6%*	*.561*
	1 year	*1*	*6.7%*	*14*	*93.3%*	
	2-3 Yrs.	*2*	*9.1%*	*20*	*90.9%*	
	4+	*2*	*6.5%*	*29*	*93.5%*	

P: Exact probability test

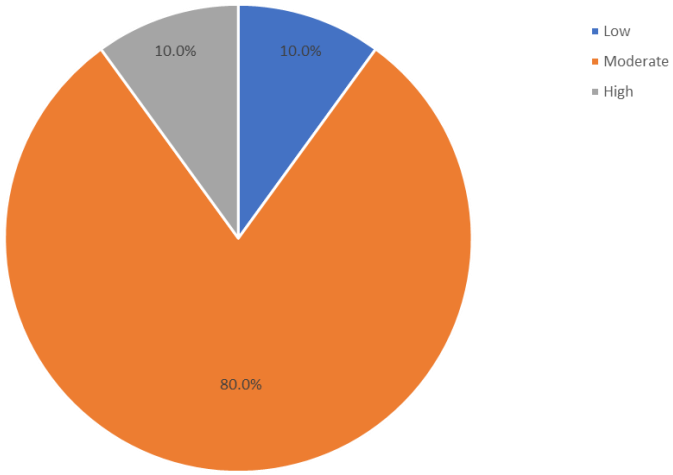

Figure 1 Overall perceived stress level among parents of children with amblyopia

4. DISCUSSION

This study showed that the most common cause of amblyopia was refractive errors (53%), followed by strabismus (32%), ptosis (7%), and optic nerve atrophy (3%) and other causes as listed in table 1. A study done in Qassim estimating the prevalence of amblyopia showed that refractive errors were the most common cause of amblyopia among primary school children to the range of 94.56% (Aldepasi &Yousef Hommod, 2015), that stresses on the fact that one of the common causes of amblyopia worldwide is refractive errors (Attebo et al., 1998). Regarding the treatment methods, our study are showed that *16.0% of* children were treated by occlusion therapy while glasses were used for 39.0% and 42.0% of children received both. Only one child underwent surgery while 3 children had no treatment. So, approximately all the patients were treated with glasses or both glasses and occlusion therapy. The duration of treatment was different from one child to another. About 34.1% child undertook treatment for more than 4 years, 25.3% of the children received treatment less than 1 year while 24.2% received treatment for the last 2-3 years. The difference in the duration of treatment was because of the severity of the amblyopia itself.

This study showed that the overall perceived stress level among parents of children with amblyopia was 80% of parents had moderate level of stress, 10% had high level of stress while 10% of parents had low stress levels. This difference in stress levels could correlate with the method of coping with stress. In this study, we investigated the effect of the guardian predominate (mother\father) in the relationship on stress and having an amblyopic child, which showed no significant difference. One the other hand, there is recent study in 2015 shows that, stress is significant in mothers of children with amblyopia (Park et al., 2015). That goes with the fact of the mothers are more emotionally involved with their children. We also investigated the effect of type of treatment of amblyopia on stress and having an amblyopic child, which showed parents of children treated with occlusion had high stress levels.

However, some families felt that glasses were more stressful (Choong et al., 2004), and the other families felt the occlusion therapy was more stressful (Dixon-Woods et al., 2006). This difference could be explained by the attitude of the child with different

types of treatment and the acceptance of the treatment modalities, whether glasses or occlusion therapy. Also the duration of treatment of amblyopia and the age of amblyopic child and their effect on stress in parents with an amblyopic child was investigated. Both of these showed no significant difference. However, all parents of children with cataract, optic nerve atrophy, or traumatic amblyopia had higher stress level. This could reflect the coping behavior which was thought to be better in parents of children with refractive errors compared to other underlying causes of amblyopia. As a limitation in this study, the sample size was 100, we need more data from different regions in Saudi Arabia, to increase the strength of our study, and minimize the bias.

5. CONCLUSION

Among parents of amblyopic child, the majority (80%) showed moderate level of stress. Stress levels were also related to the cause of amblyopia being relatively lower in parents of children with refractive errors being the underlying cause of amblyopia. This could reflect better coping strategies in these parents and also could reflect on the fact that the general outlook is better for visual improvement with glasses and the chances of reversal of amblyopia in this category of patients.

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Author's contributions

Noura Saleh Alkulaib: First Author, Questionnaire development, input in data collection and writing of manuscript.
MareyahAbdulrahmanAlshaikh Husain: co-author, Questionnaire development, input in data collection and writing of manuscript.
Fahad Al Wadani: co-author, supervisor.

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Conflict of interest

The authors declare that there are no conflicts of interests.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Data and materials availability

All data associated with this study are present in the paper.

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